

1. A novel structure for a photodiode comprising:
a p-type region extending to the surface of a semiconductor
substrate;
a multiplicity of parallel finger-like n-wells formed in said p-type
region that are connected to a conductive region at one end.
2. The structure of Claim 1 wherein said p-type region is a p-substrate.
3. The structure of Claim 1 wherein said p-type region is a p-well.
4. The structure of Claim 1 wherein said parallel finger-like n-wells are
formed by phosphorous ion implantation.
5. The structure of Claim 1 wherein the depth of said parallel finger-
like n-wells is between about 1 and 5 microns.
6. The structure of Claim 1 wherein the width of said parallel finger-
like n-wells is between about 0.5 and 2 microns.
7. The structure of Claim 1 wherein the separation of said parallel
finger-like n-wells is between about 0.5 and 2 microns.
8. The structure of Claim 1 wherein the number of fingers in said
parallel finger-like n-wells is greater than 3.
9. A method of fabricating a novel structure for a photodiode
comprising:
Providing a p-type region of a semiconductor substrate extending to
the surface of said semiconductor substrate;

Forming a multiplicity of parallel finger-like n-wells in said p-type region that are connected to a conductive region at one end.

10. The method of Claim 9 wherein said p-type region is a p-substrate.

11. The method of Claim 9 wherein said p-type region is a p-well.

5 12. The method of Claim 9 wherein said parallel finger-like n-wells are formed by phosphorous ion implantation.

13. The method of Claim 9 wherein the depth of said parallel finger-like n-wells is between about 1 and 5 microns.

14. The method of Claim 9 wherein the width of said parallel finger-like n-wells is between about 0.5 and 2 microns.

15. The method of Claim 9 wherein the separation of said parallel finger-like n-wells is between about 0.5 and 2 microns.

16. The method of Claim 9 wherein the number of fingers in said parallel finger-like n-wells is greater than 3.

15 17. A novel structure for a photodiode comprising:

an n-type region extending to the surface of a semiconductor substrate;

a multiplicity of parallel finger-like p-wells formed in said n-type region that are connected to a conductive region at one end.

20 18. The structure of Claim 17 wherein said p-type region is an n-substrate.

19. The structure of Claim 17 wherein said p-type region is an n-well.

20. The structure of Claim 17 wherein said parallel finger-like p-wells are formed by implantation of BF₂ ions.

21. The structure of Claim 17 wherein the depth of said parallel finger-like p-wells is between about 1 and 5 microns.

5 22. The structure of Claim 17 wherein the width of said parallel finger-like p-wells is between about 0.5 and 2 microns.

23. The structure of Claim 17 wherein the separation of said parallel finger-like p-wells is between about 0.5 and 2 microns.

24. The structure of Claim 17 wherein the number of fingers in said parallel finger-like p-wells is greater than 3.

10 25. A method of fabricating a novel structure for a photodiode comprising:

Providing an n-type region of a semiconductor substrate extending to the surface of said semiconductor substrate;

15 Forming a multiplicity of parallel finger-like p-wells in said n-type region that are connected to a conductive region at one end.

26. The method of Claim 25 wherein said n-type region is an n-substrate.

27. The method of Claim 25 wherein said n-type region is an n-well.

20 28. The method of Claim 25 wherein said parallel finger-like p-wells are formed by implantation of BF₂ ions.

29. The method of Claim 25 wherein the depth of said parallel finger-like p-wells is between about 1 and 5 microns.

5

30. The method of Claim 25 wherein the width of said parallel finger-like p-wells is between about 0.5 and 2 microns.
31. The method of Claim 25 wherein the separation of said parallel finger-like p-wells is between about 0.5 and 2 microns.
32. The method of Claim 25 wherein the number of fingers in said parallel finger-like p-wells is greater than 3.